UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,679	12/14/2005	Minne Van Der Veen	NL 030705	8511

24737   7590   11/26/2008
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EXAMINER
ARCHER, CHRISTOPHER B

ART UNIT	PAPER NUMBER
4148	

MAIL DATE	DELIVERY MODE
11/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>14 December 2005</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-28</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-28</u> is/are rejected.
7)☒ Claim(s) <u>14 and 26</u> is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All b)☐ Some * c)☐ None of:
      1.☒ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>01/23/2007 and 12/14/2005</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   The instant application having Application No. 10/560,679 filed on 12/14/2005 is presented for examination by the examiner.

Oath/Declaration

2.   The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63.**

Priority

3.   As required bye **M.P.E.P. 201.14(c)**, acknowledgement is made of applicant's claim for priority based on applications filed on June 19, 2003 (EPO 031017923.4).

    Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Examiner Notes

4.   Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 101

5.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6.   Claim 27 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because of the following reason:

The claim fails to place the invention squarely within one statutory class of invention. On page 15, lines 28-31 of the instant specification, applicant has provided evidence that applicant intends the "medium" to include signals. As such, the claim is drawn to a form of energy. Energy is not one of the four categories of invention and therefore this claim(s) is/are not statutory. Energy is not a series of steps or acts and thus is not a process. Energy is not a physical article or object and as such is not a machine or manufacture. Energy is not a combination of substances and therefore not a composition of matter.

7.   Claim 28 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because of the following reason:

The claim fails to place the invention squarely within one statutory class of invention. On page 15, line 33 to page 16, line 5 of the instant specification, applicant has provided evidence that applicant intends the "medium" to include signals. As such, the claim is drawn to a form of energy. Energy is not one of the four categories of invention and therefore this claim(s) is/are not statutory. Energy is not a series of steps or acts and thus is not a process. Energy is not a physical article or object and as such

is not a machine or manufacture. Energy is not a combination of substances and

therefore not a composition of matter.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9.   Claims 1, 2, 5-9, 11, 15-18, 20 and 21 are rejected under 35 U.S.C. 102(a) as

being clearly anticipated by Lemma, Negash Aweke: *A Temporal Doman Audio*

Watermarking Technique IEEE TRANSACTIONS ON SIGNAL PROCESSING, IEEE,

INC. NEW YORK, US, vol. 51, no. 4, April 2003 (2003-04), hereafter referred to as

Lemma.

Regarding claim 1:

Lemma discloses "Method of embedding additional data (w) in a media

signal (x) comprising the steps of:

obtaining a media signal (x), (step 48),

mixing at least one section of said media signal (x) with a noise signal (n;

n_s; δn) for providing a modified media signal (x+n; $x+n_s$; $x+\delta n$), (step 54), and

combining said additional data (w) with said modified media signal, (step

56) for providing a first host modifying media signal (m_w)"

as **[(Lemma page 1089, II and Fig. 1) obtains the media signal x[n],**

mixes a part of the media signal with a noise signal to obtain a modified

media signal $x_b[n]$, and finally combines the media signal $x[n]$ with the additional data $w[n]x_b[n]]$.

Regarding claim 2:

Lemma further discloses "Method according to claim 1, wherein the step of combining is performed by multiplying said modified media signal with said additional data (w)" as **[(Lemma page 1089, II and Fig. 1) shows the modified media signal x_b being multiplied by the additional data w]**.

Regarding claim 5:

Lemma further discloses "Method according to claim 1, further comprising the step of shaping said noise signal using a first signal shaping function (M1) based on a model of human perception, (step 52), for providing a shaped noise signal to be used for providing the modified media signal $(x+n_s)$" as **[(Lemma page 1088, column 1, I Paragraph 2 and page 1089 II) shows that watermarking techniques shaped to exploit the insensitivity of the human ear are common in the art]**.

Regarding claim 6:

Lemma further discloses "Method according to claim 1, further including the step of shaping said first host modifying media signal (m_w) with a second signal shaping function (M2) based on a model of human perception, (step 58), for providing a second host modifying media signal (m_{ws})" as **[(Lemma page**

1089, column 1, II and Figure 1) shows the first host modifying media signal being combined with the original media signal x[n] altered by the HAS. The HAS signal is then combined with the host modifying media signal w[n]x$_b$[n]].

Regarding claim 7:

Lemma further discloses "Method according to claim 1, further including the step of adding a host modifying media signal (m$_w$; m$_{ws}$) to said modified media signal (step 60)" as **[(Lemma page 1089, II formula (2)) shows the modified media signal αw[n]x$_b$[n] being added to a host modifying media signal x$_b$[n]].**

Regarding claim 8:

Lemma further discloses "Method according to claim 1, further including the step of adding a host modifying media signal (m$_w$; m$_{ws}$) to said media signal" as **[(Lemma page 1089, II formula (1) and Fig. 1) shows the modified media signal αw[n]x$_b$[n] being added to a host media signal x[n]].**

Regarding claim 9:

Lemma further discloses "Method according to claim 1, further comprising the step of scaling said noise signal using a scaling factor δ prior to the step of mixing for providing a scaled noise signal to be used for providing the modified media signal (x+δn)" as **[(Lemma page 1089, II and Fig. 1) shows the noise**

signal $w[n]x_b[n]$ being scaled by α to create $\alpha w[n]x_b[n]$, before being added

to the original media signal $x[n]$].

Regarding claim 11:

Lemma further discloses "Method according to claim 1, wherein said

additional data is a watermark (w)" as **[(Lemma page 1089, II) shows that the**

additional data embedded into the media signal is a watermark].

Regarding claim 15:

Lemma further discloses "Device (10) for embedding additional data (w) in

a media signal (x) comprising:

a first adding unit (12) for mixing at least one section of said media signal

(x) with a noise signal (n; n_s; δn) in order to provide a modified media signal (x+n;

x+n_s; x+δn), and

a combiner unit (14) for combining said additional data (w) with said

modified media signal for providing a first host modifying media signal (m_w)"

as **[(Lemma page 1089, II and Fig. 1) obtains the media signal x[n],**

mixes a part of the media signal with a noise signal to obtain a modified

media signal $x_b[n]$, and finally combines the media signal x[n] with the

additional data $w[n]x_b[n]$].

Regarding claim 16:

Lemma further discloses "Device according to claim 15, wherein the combiner unit is arranged to combine said additional data with said modified media signal through multiplying said modified media signal with said additional data" as **[(Lemma page 1089, ll formula (1) and Figure 1) shows the additional data w[n] being multiplied by the modified media signal $x_b[n]$ to produce $w[n]x_b[n]$]**.

Regarding claim 17:

Lemma further discloses "Device according to claim 15, further comprising a first signal shaping unit (40) arranged to shape said noise signal using a first signal shaping function (M1) based on a model (P) of human perception, for providing a shaped noise signal to be used for providing the modified media signal" as **[(Lemma page 1088, column 1, l Paragraph 2 and page 1089 ll) shows that watermarking techniques shaped to exploit the insensitivity of the human ear are common in the art]**.

Regarding claim 18:

Lemma further discloses "Device according to claim 15, further comprising a second signal shaping unit (44) arranged to shape said first host modifying media signal with a second signal shaping function (M2) based on a model (P) of human perception, for providing a second host modifying media signal" as **[(Lemma page 1089, column 1, ll and Figure 1) shows the first host modifying media signal being combined with the original media signal x[n]**

altered by the HAS unit. The HAS modified signal is then combined with the host modifying media signal w[n]x$_b$[n]].

Regarding claim 20:

Lemma further discloses "Device according to claim 15, further comprising a second adding unit (36) arranged to add a host modifying media signal to said media signal (x)" as **[(Lemma page 1089, II formula (1) and Figure 1) shows the host modifying media signal w[n]x$_b$[n] being added to the original media signal x[n]].**

Regarding claim 21:

Lemma further discloses "Device according to claim 15, further comprising a scaling unit (62) arranged to scale down said noise signal (δn) prior to mixing with said media signal (x) for providing a scaled noise signal to be used for providing the modified media signal" as **[(Lemma page 1089, II and Fig. 1) shows the noise signal w[n]x$_b$[n] being scaled by α to create αw[n]x$_b$[n], before being added to the original media signal x[n]].**

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lemma as applied to claim 2 above in view of Moskowitz et al. (US Patent No.

5,687,236), hereafter referred to as Moskowitz.

Regarding claim 3:

Lemma discloses "Method according to claim 2," but fails to explicitly

disclose "wherein the step of multiplying is performed in the time domain."

However, Moskowitz discloses "wherein the step of multiplying is

performed in the time domain" as **[(Moskowitz column 7, lines 1-49) shows**

that encoding information into the frequency domain is common in the art.

If information is encoded in the frequency domain, the information is

multiplied in the time domain].

Lemma and Moskowitz are analogous art because they are from the same

field of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to encode the information in the frequency domain since its results

are not easily predicted, as described in Moskowitz.

12.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma

as applied to claim 2 above in view of Moskowitz.

Regarding claim 4:

Moskowitz further discloses "Method according to claim 2, wherein the

step of multiplying is performed in the frequency domain" as **[(Moskowitz**

**column 7, lines 1-49) shows that encoding information in the time domain
is common in the art. If the information is encoded in the time domain, the
information is multiplied in the frequency domain]**.

Lemma and Moskowitz are analogous art because they are from the same
field of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of
the invention to encode the information in the frequency domain because more
information can be encoded into the signal, as described by Moskowitz.

13.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma
as applied to claim 9 above in view of Zhao, Jian: *A Generic Digital Watermarking
Model* COMPUTERS AND GRAPHICS, PERMAGON PRESS LTD. OXFORD, GB, vol.
22, no 4, 1 August 1998 (1998-01), hereafter referred to as Zhao.

Regarding claim 10:

Lemma discloses "Method according to claim 9," but fails to explicitly
disclose "further including the step of adding an unscaled noise signal to said first
host modifying media signal."

However, Zhao discloses "further including the step of adding an unscaled
noise signal to said first host modifying media signal" as **[(Zhao pages 399-400,
sections 3.1.8- 3.2) shows an unscaled bit-noise being added to the bit
carrier]**.

Lemma and Zhao are analogous art because they are from the same field
of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add noise to a signal for the purposes of carrying watermarked information, as described by Zhao.

14.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma as applied to claim 1 above in view of Zhao.

Regarding claim 12:

Zhao further discloses "Method according to claim 1, further comprising the step of analysing (A) the media signal and providing, for different sections of the media signal, a section of said modified media signal (x+n) or a section of said media signal (x) in dependence of the analysis for combining with said additional data" as **[(Zhao page 398 paragraph 2 shows a signal being analyzed for the selection of noisy data. (Zhao page 400, 3.2.2) shows a noise generator that provides noisy sections in a media signal]**.

Lemma and Zhao are analogous art because they are from the same field of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add noise to a signal for the purposes of carrying watermarked information, as described by Zhao.

15.   Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma as applied to claim 21 above in view of Zhao.

Regarding claim 22:

Lemma discloses "Device according to claim 21," but fails to explicitly

disclose "further comprising a third adding unit (64) arranged to add an unscaled

noise signal to said first host modifying media signal."

However, Zhao discloses "further comprising a third adding unit (64)

arranged to add an unscaled noise signal to said first host modifying media

signal" as **[(Zhao pages 399-400, sections 3.1.8- 3.2) shows an unscaled bit-**

noise being added to the bit carrier].

Lemma and Zhao are analogous art because they are from the same field

of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to add noise to a signal for the purposes of carrying watermarked

information, as described by Zhao.

16.   Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lemma as applied to claim 15 above in view of Zhao.

<u>Regarding claim 23:</u>

Zhao further discloses "Device according to claim 15, further comprising

an analysing unit (66) arranged to analyse said media signal (x) and control, for

different sections of the media signal, the provision of a section of a modified

media signal or a section of said media signal to the combiner unit (14) for

combining with said additional data in dependence of the analysis (A)," as **[(Zhao**

page 398 paragraph 2 shows a signal being analyzed for the selection of

noisy data. (Zhao page 400, 3.2.2) shows a noise generator that provides noisy sections in a media signal].

Lemma and Zhao are analogous art because they are from the same field of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add noise to a signal for the purposes of carrying watermarked information, as described by Zhao.

Regarding claim 24:

Zhao further discloses "Device according to claim 23, further comprising at least one first switch (68) arranged to connect said media signal or said modified media signal to the combiner unit under the control of the analysing unit," as **[(Zhao page 398 paragraph 2) shows a signal being analyzed for the selection of noisy data. (Zhao page 400, 3.2.2-3.2.3 and Figure 1) shows a noise generator and bit-carrier modifiers. The general formulas for computing bit-carrier modifiers contain signals that already have a noise section $C_i' = c_i + a_i^* s_i$ and signals that have added noise components $C_i' = c_i^*(1 + a_i^* s_i)$]**.

17.   Claims 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma in view of Zhao.

Regarding claim 14:

Lemma and Zhao disclose "Method of embedding additional data (w) in a media signal (x) comprising the steps of: obtaining a media signal (x), analysing (A) the media signal, mixing at least one section of said media signal (x) with a noise signal (n) for providing a modified media signal (x+n), and combining, for different sections of the media signal, said additional data (w) with said modified media signal (x+n) or with said original media signal (x) in dependence of the analysis" as **[see rejection for claim 12]**.

Lemma and Zhao are analogous art because they are from the same field of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add noise to a signal for the purposes of carrying watermarked information, as described by Zhao.

Regarding claim 26:

Lemma and Zhao disclose "Device (10) for embedding additional data (w) in a media signal (x) comprising: a first adding unit (12) for mixing at least one section of said media signal (x) with a noise signal (n; n_s; δn) in order to provide a modified media signal (x+n; $x+n_s$; $x+\delta n$), a combiner unit (14) for combining said additional data (w) with said modified media signal (x+n) or with said media signal (x) for providing a first host modifying signal, and an analysing unit (66) arranged to analyse said media signal (x) and control, for different sections of the media signal, the provision of said modified media signal or said media signal to

the combiner unit (14) in dependence of the analysis (A)" as **[see rejection for claim 23]**.

18.   Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma in view of Zhao as applied to claim 12 above, and further in view of Strolle et al. (US Patent No. 6,104,863), hereafter referred to as Strolle.

Regarding claim 13:

Lemma and Zhao disclose "Method according to claim 12," but fail to explicitly disclose "further comprising the step of switching between said media signal and a modified media signal for combining with said additional data, wherein the step of switching preferably is a graceful switching."

However, Strolle discloses "further comprising the step of switching between said media signal and a modified media signal for combining with said additional data, wherein the step of switching preferably is a graceful switching" as **[(Strolle column 9 lines 21- 49) shows that soft switches are common for encoding and decoding of digital media information]**.

Lemma and Strolle are analogous art because they are from the same field of endeavor of digital media encoding.

It would have been obvious to one of ordinary skill in the art at the time of the invention to allow adaptive processing of the video signal, which involves gradual transition from the maximum value to a zero value, as mentioned by Strolle.

19.   Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemma

in view of Zhao as applied to claim 24 above, and further in view of Strolle.

Regarding claim 25:

Lemma and Zhao disclose "Device according to claim 24," but fail to

explicitly disclose "wherein there is a second switch (70) controlled by the

analysing unit, wherein the first switch connects said modified media signal to the

combiner unit, the second switch connects said media signal to the combiner unit

and the switches are arranged to switch gracefully from one state to the other."

However, Strolle discloses "wherein there is a second switch (70)

controlled by the analysing unit, wherein the first switch connects said modified

media signal to the combiner unit, the second switch connects said media signal

to the combiner unit and the switches are arranged to switch gracefully from one

state to the other" as **[(Strolle column 9 lines 21- 49) shows that soft

switches are common for encoding and decoding of digital media

information]**.

Lemma and Zhao are analogous art because they are from the same field

of endeavor of digital watermarking.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to allow adaptive processing of the video signal, which involves

gradual transition from the maximum value to a zero value, as mentioned by

Strolle.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER B. ARCHER whose telephone number is (571)270-7308. The examiner can normally be reached on M-F 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Pham can be reached on (571)272-3689. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. B. A./
Examiner, Art Unit 4148

                    /THOMAS PHAM/
                    Supervisory Patent Examiner, Art Unit 4148